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US5917912: System and methods for secure transaction management and electronic rights protection

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Inventor(s): **Ginter; Karl L.**, Beltsville, MD
Shear; Victor H., Bethesda, MD
Spahn; Francis J., El Cerrito, CA
Van Wie; David M., Sunnyvale, CA

Applicant(s): **InterTrust Technologies Corporation**, Sunnyvale, CA
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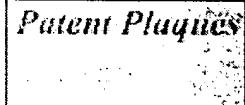
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Original: 380/024; 380/004; 395/683; 705/040;**

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Legal Status:  [Show legal status actions](#)

Abstract: The present invention provides systems and methods for secure transaction management and electronic rights protection. Electronic appliances such as computers equipped in accordance with the present invention help to ensure that information is accessed and used only in authorized ways, and maintain the integrity, availability, and/or confidentiality of the information. Such electronic appliances provide a distributed virtual distribution environment (VDE) that may enforce a secure chain of handling and control, for example, to control and/or meter or otherwise monitor use of electronically stored or disseminated information. Such a virtual distribution environment may be used to protect rights of various participants in electronic commerce and other electronic or electronic-facilitated transactions. Distributed and other operating systems, environments and architectures, such as, for example, those using tamper-resistant hardware-based processors, may establish security at each node. These techniques may be used to support an all-electronic information distribution, for example, utilizing the "electronic highway."

Attorney, Agent, or  **Nixon & Vanderhye P.C.;**

Attorney, Agent, or
Firm: **Nixon & Vanderhye P.C.;**
Primary/Assistant
Examiners: **Barron, Jr.; Gilberto;**

Related Applications:

Application Number	ApplDate	Patent	Issued	Title
US1995000388107	1995-02-13			

Family: Show known family members

U.S. References:

Show the 5 patents that reference this one

Patent	Issued	Inventor(s)	Applicant(s)	Title
US3573747	4 /1971	Adams et al.	Institutional Networks Corporation	INSTINET COMMUNICATION SYSTEM FOR EFFECTUATING THE SALE OR EXCHANGE OF FUNGIBLE PROPERTIES BETWEEN SUBSCRIBERS
US3609697	9 /1971	Blevins	International Business Machines Corporation	PROGRAM SECURITY DEVICE
US3796830	3 /1974	Smith	International Business Machines Corporation	RECIRCULATING BLOCK CIPHER CRYPTOGRAPHIC SYSTEM
US3798359	3 /1974	Feistel	International Business Machines Corporation	BLOCK CIPHER CRYPTOGRAPHIC SYSTEM
US3798360	3 /1974	Feistel	International Business Machines Corporation	STEP CODE CIPHERING SYSTEM
US3798605	3 /1974	Feistel	International Business Machines Corporation	CENTRALIZED VERIFICATION SYSTEM
US3806882	4 /1974	Clarke		SECURITY FOR COMPUTER SYSTEMS
US3829833	8 /1974	Freeny, Jr.	Information Identification Company, Inc.	CODE ELEMENT IDENTIFICATION METHOD AND APPARATUS
US3906448	9 /1975	Henriques	RCA Corporation	Fault detection facilitating means for card reader of identification card reading system
US3911397	10 /1975	Freeny, Jr.	Information Identification Inc.	Access control assembly
US3924065	12 /1975	Freeny, Jr.	Information Identification, Inc.	Coherent, fixed BAUD rate FSK communication method and apparatus
US3931504	1 /1976	Jacoby	Basic Computing Arts, Inc.	Electronic data processing security system and method
US3946220	3 /1976	Brobeck et al.	Transactron, Inc.	Point-of-sale system and apparatus
US3956615	5 /1976	Anderson et al.	IBM Corporation	Transaction execution system with secure data storage and communications
US3958081	5 /1976	Ehrsam et al.	International Business Machines	Block cipher system for data security

			Corporation	data security
US3970992	7 /1976	Boothroyd et al.	IBM Corporation	Transaction terminal with <u>unlimited range of functions</u>
US4048619	9 /1977	Forman, Jr. et al.	Digital Data Inc.	Secure two channel SCA broadcasting system
US4071911	1 /1978	Mazur	Continental Can Co. Inc.	Machine control system with machine serializing and safety circuits
US4112421	9 /1978	Freeny, Jr.	Information Identification Company, Inc.	Method and apparatus for automatically monitoring objects
US4120030	10 /1978	Johnstone	Kearney & Trecker Corporation	Computer software security system
US4163280	7 /1979	Mori et al.	Tokyo Shibaura Electric Co., Ltd.	Address management system
US4168396	9 /1979	Best		Microprocessor for executing enciphered programs
US4196310	4 /1980	Forman et al.	Digital Data, Inc.	Secure SCA broadcasting system including subscriber actuated portable receiving terminals
US4200913	4 /1980	Kuhar et al.	International Business Machines Corporation	Operator controlled programmable keyboard apparatus
US4209787	6 /1980	Freeny, Jr.	Gould Inc.	Method for monitoring the location of monitored objects
US4217588	8 /1980	Freeny, Jr.	Information Identification Company, Inc.	Object monitoring method and apparatus
US4220991	9 /1980	Hamano et al.	Tokyo Electric Co., Ltd.	Electronic cash register with removable memory packs for cashier identification
US4232193	11 /1980	Gerard	The Marconi Company Limited	Message signal scrambling apparatus
US4232317	11 /1980	Freeny, Jr.		Quantized hyperbolic and inverse hyperbolic object location system
US4236217	11 /1980	Kennedy		Energy utilization or consumption recording arrangement
US4253157	2 /1981	Kirschner et al.	Alpex Computer Corp.	Data access system wherein subscriber terminals gain access to a data bank by telephone lines
US4262329	4 /1981	Bright et al.	Computation Planning, Inc.	Security system for data processing
US4265371	5 /1981	Desai et al.	Trafalgar Industries Inc.	Foodstuff vending apparatus employing improved solid-state type control apparatus
US4270182	5 /1981	Asija		Automated information input, storage, and retrieval system
US4278837	7 /1981	Best		Crypto microprocessor for executing enciphered programs

programs				
US4305131	12 /1981	Best		Dialog between TV movies and human viewers
US4306289	12 /1981	Lumley	Western Electric Company, Inc.	Digital computer having code conversion apparatus for an encrypted program
US4309569	1 /1982	Merkle	The Board of Trustees of the Leland Stanford Junior University	Method of providing digital signatures
US4319079	3 /1982	Best		Crypto microprocessor using block cipher
US4323921	4 /1982	Guillou	Etablissement Public de Diffusion dit "Telediffusion de France"	System for transmitting information provided with means for controlling access to the information transmitted
US4328544	5 /1982	Baldwin et al.	International Business Machines Corporation	Electronic point-of-sale system using direct-access storage
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US4361877	11 /1982	Dyer et al.	Sangamo Weston, Inc.	Billing recorder with non-volatile solid state memory
US4375579	3 /1983	Davida et al.	Wisconsin Alumni Research Foundation	Database encryption and decryption circuit and method using subkeys
US4433207	2 /1984	Best		Cryptographic decoder for computer programs
US4434464	2 /1984	Suzuki et al.	Hitachi, Ltd.	Memory protection system for effecting alteration of protection information without intervention of control program
US4442486	4 /1984	Mayer	U.S. Philips Corporation	Protected programmable apparatus
US4446519	5 /1984	Thomas	Corban International, Ltd.	Method and apparatus for providing security for computer software
US4454594	6 /1984	Heffron et al.	U.S. Philips Corporation	Method and apparatus to secure proprietary operation of computer equipment
US4458315	7 /1984	Uchenick	Penta, Inc.	Apparatus and method for preventing unauthorized use of computer programs
US4462076	7 /1984	Smith, III	Smith Engineering	Video game cartridge recognition and security system
US4462078	7 /1984	Ross		Computer program protection method
US4465901	8 /1984	Best		Crypto microprocessor that executes enciphered programs
US4471163	9 /1984	Donald et al.		Software protection system
US4484217	11 /1984	Block et al.	Telelease, Inc.	Method and system for remote reporting, particularly for pay television billing
				Selectable format

US4494156	1 /1985	Kadison et al.	Media Systems Technology	Selectable format computer disk copier machine
US4513174	4 /1985	Herman	Standard Microsystems Corporation	Software security method using partial fabrication of proprietary control word decoders and microinstruction memories
US4528588	7 /1985	Lofberg		Method and apparatus for marking the information content of an information carrying signal
US4528643	7 /1985	Freeny, Jr.	FPDC, Inc.	System for reproducing information in material objects at a point of sale location
US4553252	11 /1985	Egendorf		Counting computer software cartridge
US4558176	12 /1985	Matyas et al.		Computer systems to inhibit unauthorized copying, unauthorized usage, and automated cracking of protected software
US4558413	12 /1985	Schmidt et al.	Xerox Corporation	Software version management system
US4562306	12 /1985	Chou et al.		Method and apparatus for protecting computer software utilizing an active coded hardware device
US4562495	12 /1985	Bond et al.	Verbatim Corporation	Multiple system disk
US4577289	3 /1986	Comerford et al.	International Business Machines Corporation	Hardware key-on-disk system for copy-protecting magnetic storage media
US4584641	4 /1986	Guglielmino		Copyprotecting system for software protection
US4588991	5 /1986	Atalla	Atalla Corporation	File access security method and means
US4589064	5 /1986	Chiba et al.	Fujitsu Limited	System for controlling key storage unit which controls access to main storage
US4593353	6 /1986	Pickholtz	Telecommunications Associates, Inc.	Software protection method and apparatus
US4593376	6 /1986	Volk		System for vending program cartridges which have circuitry for inhibiting program usage after preset time interval expires
US4595950	6 /1986	Lofberg		Method and apparatus for marking the information content of an information carrying signal
US4597058	6 /1986	Izumi et al.	Romox, Inc.	Cartridge programming system
US4634807	1 /1987	Chorley et al.	National Research Development Corp.	Software protection device
US4644493	2 /1987	Chandra et al.	International Business Machines Corporation	Implementing a shared higher level of privilege on personal computers for copy protection of software
				Anti-piracy system using separate storage and

US4646234	2 /1987	Tolman et al.	Brigham Young University	<u>separate storage and alternate execution of selected proprietary and public portions of computer programs</u>
US4652990	3 /1987	Pailen et al.	Remote Systems, Inc.	<u>Protected software access control apparatus and method</u>
US4658093	4 /1987	Hellman		<u>Software distribution system</u>
US4670857	6 /1987	Rackman		<u>Cartridge-controlled system whose use is limited to authorized cartridges</u>
US4672572	6 /1987	Alsberg	Gould Inc.	<u>Protector system for computer access and use</u>
US4677434	6 /1987	Fascenda	Lotus Information Network Corp.	<u>Access control system for transmitting data from a central station to a plurality of receiving stations and method therefor</u>
US4680731	7 /1987	Izumi et al.	Romox Incorporated	<u>Reprogrammable cartridge memory with built-in identification circuitry and programming method</u>
US4683553	7 /1987	Mollier	Cii Honeywell Bull (Societe Anonyme)	<u>Method and device for protecting software delivered to a user by a supplier</u>
US4685056	8 /1987	Barnsdale et al.	Pueblo Technologies, Inc.	<u>Computer security device</u>
US4688169	8 /1987	Joshi		<u>Computer software security system</u>
US4691350	9 /1987	Kleijne et al.	NCR Corporation	<u>Security device for stored sensitive data</u>
US4696034	9 /1987	Wiedemer	Signal Security Technologies	<u>High security pay television system</u>
US4701846	10 /1987	Ikeda et al.	Panafacom Limited	<u>Computer system capable of interruption using special protection code for write interruption region of memory device</u>
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US4713753	12 /1987	Boebert et al.	Honeywell Inc.	<u>Secure data processing system architecture with format control</u>
US4740890	4 /1988	William	Software Concepts, Inc.	<u>Software protection system with trial period usage code and unlimited use unlocking code both recorded on program storage media</u>
US4747139	5 /1988	Taaffe		<u>Software security method and systems</u>
US4757533	7 /1988	Allen et al.	Computer Security Corporation	<u>Security system for microcomputers</u>
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software				
US4796181	1 /1989	Wiedemer		<u>Billing system for computer software</u>
US4799156	1 /1989	Shavit et al.	Strategic Processing Corporation	<u>Interactive market management system</u>
US4807288	2 /1989	Ugon et al.	C.I.I. Honeywell Bull	<u>Microprocessor intended particularly for executing the calculation algorithms of a public code encoding system</u>
US4817140	3 /1989	Chandra et al.	International Business Machines Corp.	<u>Software protection system using a single-key cryptosystem, a hardware-based authorization system and a secure coprocessor</u>
US4823264	4 /1989	Deming		<u>Electronic funds transfer system</u>
US4827508	5 /1989	Shear	Personal Library Software, Inc.	<u>Database usage metering and protection system and method</u>
US4858121	8 /1989	Barber et al.	Medical Payment Systems, Incorporated	<u>Medical payment system</u>
US4864494	9 /1989	Kobus	Computerized Data Ssystems for Mfg., Inc.	<u>Software usage authorization system with key for decrypting/re-encrypting/re-transmitting moving target security codes from protected software</u>
US4868877	9 /1989	Fischer		<u>Public key/signature cryptosystem with enhanced digital signature certification</u>
US4903296	2 /1990	Chandra et al.	International Business Machines Corporation	<u>Implementing a shared higher level of privilege on personal computers for copy protection of software</u>
US4924378	5 /1990	Hershey et al.	Prime Computer, Inc.	<u>License management system and license storage key</u>
US4930073	5 /1990	Cina, Jr.	International Business Machines Corporation	<u>Method to prevent use of incorrect program version in a computer system</u>
US4949187	8 /1990	Cohen		<u>Video communications system having a remotely controlled central source of video and audio data</u>
US4977594	12 /1990	Shear	Electronic Publishing Resources, Inc.	<u>Database usage metering and protection system and method</u>
US4999806	3 /1991	Chernow et al.		<u>Software distribution system</u>
US5001752	3 /1991	Fischer		<u>Public/key date-time notary facility</u>
US5005122	4 /1991	Griffin et al.	Digital Equipment Corporation	<u>Arrangement with cooperating management server node and network service node</u>
US5005200	4 /1991	Fisher		<u>Public key/signature cryptosystem with enhanced digital signature</u>

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US5023907	6 /1991	Johnson et al.	Apollo Computer, Inc.	Network license server
US5047928	9 /1991	Wiedemer		Billing system for computer software
US5048085	9 /1991	Abraham et al.	International Business Machines Corporation	Transaction system security method and apparatus
US5050213	9 /1991	Shear	Electronic Publishing Resources, Inc.	Database usage metering and protection system and method
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US5103476	4 /1992	Waite et al.		Secure system for activating personal computer software at remote locations
US5111390	5 /1992	Ketcham	Unisys Corporation	Software security system for maintaining integrity of compiled object code by restricting users ability to define compilers
US5119493	6 /1992	Janis et al.	International Business Machines Corporation	System for recording at least one selected activity from a selected resource object within a distributed data processing system
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US5136716	8 /1992	Harvey et al.	Digital Equipment Corporation	Session control in network for digital data processing system which supports multiple transfer protocols
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US5201046	4 /1993	Goldberg et al.	Xidak, Inc.	Relational database management system and method for storing, retrieving and modifying directed graph data structures
US5201047	4 /1993	Maki et al.	International Business Machines Corporation	Attribute-based classification and retrieval system
US5208748	5 /1993	Flores et al.	Action Technologies, Inc.	Method and apparatus for structuring and managing human communications by explicitly defining the types of communications permitted between participants
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US5222134	6 /1993	Waite et al.	Tau Systems Corporation	Secure system for activating personal computer software at remote locations
US5224160	6 /1993	Paulini et al.	Siemens Nixdorf Informationssysteme AG	Process for securing and for checking the integrity of the secured programs
US5224163	6 /1993	Gasser et al.	Digital Equipment Corporation	Method for delegating authorization from one entity to another through the use of session encryption keys
US5235642	8 /1993	Wobber et al.	Digital Equipment Corporation	Access control subsystem and method for distributed computer system using locally cached authentication credentials
US5245165	9 /1993	Zhang	Xerox Corporation	Self-clocking glyph code for encoding dual bit digital values robustly
US5260999	11 /1993	Wyman	Digital Equipment Corporation	Filters in license management system
				Method and system for

US5263158	11 /1993	Janis	International Business Machines Corporation	Method and system for variable authority level user access control in a distributed data processing system having multiple resource manager
US5265164	11 /1993	Matyas et al.	International Business Machines Corporation	Cryptographic facility environment backup/restore and replication in a public key cryptosystem
US5276735	1 /1994	Boebert et al.	Secure Computing Corporation	Data enclave and trusted path system
US5280479	1 /1994	Mary	Matra Communication	Device for insertion of digital packets in a transmission channel
US5285494	2 /1994	Sprecher et al.	PacTel Corporation	Network management system
US5301231	4 /1994	Abraham et al.	International Business Machines Corporation	User defined function facility
US5311591	5 /1994	Fischer		Computer system security method and apparatus for creating and using program authorization information data structures
US5319705	6 /1994	Halter et al.	International Business Machines Corporation	Method and system for multimedia access control enablement
US5337360	8 /1994	Fischer		Method and apparatus for creating, supporting, and using travelling programs
US5341429	8 /1994	Stringer et al.	TestDrive Corporation	Transformation of ephemeral material
US5343527	8 /1994	Moore	International Business Machines Corporation	Hybrid encryption method and system for protecting reusable software components
US5347579	9 /1994	Blandford		Personal computer diary
US5351293	9 /1994	Michener et al.	Wave Systems Corp.	System method and apparatus for authenticating an encrypted signal
US5355474	10 /1994	Thuraisingham et al.		System for multilevel secure database management using a knowledge base with release-based and other security constraints for query, response and update modification
US5373561	12 /1994	Haber et al.	Bell Communications Research, Inc.	Method of extending the validity of a cryptographic certificate
US5390247	2 /1995	Fischer		Method and apparatus for creating, supporting, and using travelling programs
US5390330	2 /1995	Talati		Control system and method for direct execution of software application information models without code generation
US5392220	2 /1995	van den	U.S. Philips	Method and system for

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US5392390	2 /1995	Crozier	IntelliLink Corp.	Method for mapping, translating, and dynamically reconciling data between disparate computer platforms
US5394469	2 /1995	Nagel et al.	Infosafe Systems, Inc.	Method and apparatus for retrieving secure information from mass storage media
US5410598	4 /1995	Shear	Electronic Publishing Resources, Inc.	Database usage metering and protection system and method
US5412717	5 /1995	Fischer		Computer system security method and apparatus having program authorization information data structures
US5421006	5 /1995	Jablon	Compaq Computer Corp.	Method and apparatus for assessing integrity of computer system software
US5422953	6 /1995	Fischer		Personal date/time notary device
US5428606	6 /1995	Moskowitz		Digital information commodities exchange
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US5444779	8 /1995	Daniele	Xerox Corporation	Electronic copyright royalty accounting system using glyphs
US5449895	9 /1995	Hecht et al.	Xerox Corporation	Explicit synchronization for self-clocking glyph codes
US5449896	9 /1995	Hecht et al.	Xerox Corporation	Random access techniques for use with self-clocking glyph codes
US5450493	9 /1995	Maher	AT&T Corp.	Secure communication method and apparatus
US5453601	9 /1995	Rosen	Citibank, N.A.	Electronic-monetary system
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US5457736	10 /1995	Dolphin	U S WEST Technologies, Inc.	System and method for providing microcellular personal communications services (PCS) utilizing

				services (PCS) utilizing embedded switches
US5457746	10 /1995	Dolphin	Spyrus, Inc.	System and method for access control for portable data storage media
US5463565	10 /1995	Cookson et al.	Time Warner Entertainment Co., L.P.	Data block format for software carrier and player therefor
US5473687	12 /1995	Lipscomb et al.	Infosafe Systems, Inc.	Method for retrieving secure information from a database
US5473692	12 /1995	Davis	Intel Corporation	Roving software license for a hardware agent
US5479509	12 /1995	Ugon	Bull CP8	Method for signature of an information processing file, and apparatus for implementing it
US5485622	1 /1996	Yamaki	Kabushiki Kaisha Toshiba	Password processing system for computer
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US5497479	3 /1996	Hornbuckle	SofTel, Inc.	Method and apparatus for remotely controlling and monitoring the use of computer software
US5497491	3 /1996	Mitchell et al.	International Business Machines Corporation	System and method for importing and exporting data between an object oriented computing environment and an external computing environment
US5499298	3 /1996	Narasimhalu et al.	National University of Singapore	Controlled dissemination of digital information
US5504757	4 /1996	Cook et al.	International Business Machines Corporation	Method for selecting transmission speeds for transmitting data packets over a serial bus
US5504818	4 /1996	Okano		Information processing system using error-correcting codes and cryptography
US5504837	4 /1996	Griffeth et al.	Bell Communications Research, Inc.	Method for resolving conflicts among distributed entities through the generation of counter proposals by transversing a goal hierarchy with acceptable, unacceptable, and indeterminate nodes
US5508913	4 /1996	Yamamoto et al.	Fujitsu Limited	Electronic automatic offer matching system for freezer exchange transactions among banks
US5509070	4 /1996	Schull	SoftLock Services Inc.	Method for encouraging purchase of executable and non-executable software
US5513261	4 /1996	Maher	AT&T Corp.	Key management scheme for use with electronic cards
US5530235	6 /1996	Stefik et al.	Xerox Corporation	Interactive contents

US5530235	6 /1996	Stefik et al.	Xerox Corporation	Interactive contents revealing storage device
US5530752	6 /1996	Rubin	Convex Computer Corporation	Systems and methods for protecting software from unlicensed copying and use
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				Apparatus and method for

US5633932	5 /1997	Davis et al.	Intel Corporation	<u>preventing disclosure through user-authentication at a printing node</u>
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US5768426	6 /1998	Rhoads	Digimarc Corporation		Graphics processing system employing embedded code signals

■

CLAIMS:
[\[Hide claims\]](#):

We claim:

1. A process which takes place in an apparatus including a secure processing unit, comprising the following steps:

- accessing a first record containing information directly or indirectly identifying one or more elements of a first component assembly, at least one of said elements including at least some executable programming;
- using said information to identify and locate said one or more elements;
 - said step of identifying and locating one or more elements includes locating one or more load modules, said load module(s) locating step comprising:
 - searching in at least one memory of said secure processing unit to determine whether at least one of said one or more load modules is located in said memory;
 - if at least one of said one or more load modules is located in a memory of said secure processing unit, loading and using said load module without decrypting said load module; and
 - if at least one of said one or more load modules is located outside of a memory of said secure processing unit, decrypting said load module prior to use of said load module;
 - accessing said located one or more elements;
 - securely assembling said one or more elements to form at least a portion of said first component assembly; and
 - executing at least some of said executable programming.

2. A process as in claim 1 in which at least one memory of said secure processing unit contains at least one load module relating to a budget method.

3. A process as in claim 1 in which at least one memory of said secure processing unit contains at least one load module relating to a billing method.

4. A process as in claim 1 in which at least one memory of said secure processing unit contains at least one load module relating to an audit method.

5. A process as in claim 1 in which at least one memory of said secure processing unit contains at least one load module relating to an aggregate method comprising budgeting, billing and auditing functions.

6. A process comprising the following steps:

- accessing a first record containing information directly or

- accessing a first record containing information directly or indirectly identifying one or more elements of a first component assembly,
 - at least one of said elements including at least some executable programming,
 - at least one of said elements constituting a load module,
 - said load module including executable programming and a header;
 - at least a portion of said header is a public portion which is characterized by a relatively lower level of security protection; and
 - at least a portion of said header is a private portion which is characterized, at least some of the time, by a level of security protection which is relatively higher than said relatively lower level of security protection,
- using said information to identify and locate said one or more elements;
- accessing said located one or more elements;
- securely assembling said one or more elements to form at least a portion of said first component assembly;
- executing at least some of said executable programming; and
- checking said record for validity prior to performing said executing step.

7. A process as in claim 6 in which:

- said relatively lower level of security protection comprises storing said public header portion in an unencrypted state; and
- said relatively higher level of security protection comprises storing said private header portion in an encrypted state.

8. A process comprising the following steps:

- accessing a first record containing information directly or indirectly identifying one or more elements of a first component assembly,
- at least one of said elements including at least some executable programming,
- at least one of said elements constituting a load module,
 - said load module including executable programming and a header;
 - said header including an execution space identifier identifying at least one aspect of an execution space required for use and/or execution of the load module associated with said header;

said execution space identifier provides the capability for distinguishing between execution spaces providing a higher level of security and execution spaces providing a lower level of security;

- using said information to identify and locate said one or more elements;
- accessing said located one or more elements;
- securely assembling said one or more elements to form at least a portion of said first component assembly;
- executing at least some of said executable programming; and
- checking said record for validity prior to performing said executing step.

9. A process as in claim 8 in which said execution space providing a higher level of security comprises a secure processing environment.

10. A process as in claim 9 in which said secure processing environment contains at least one secure processing unit.

11. A process as in claim 10 in which said execution space providing a lower level of security comprises a host event processing environment.

12. A process as in claim 11 in which said host event processing environment does not contain a secure processing unit.

13. A process as in claim 8 further comprising:

- comparing said execution space identifier against information identifying the execution space in which said executing step is to occur; and
- taking an action if said execution space identifier requires an execution space with a security level higher than that of the execution space in which said executing step is to occur.

14. A process as in claim 13 in which said action includes terminating said process prior to said executing step.

15. A process as in claim 14 in which said action includes failing to include said load module in said component assembly.

16. A process as in claim 15 further comprising:

- following said action, attempting to locate a second load module, incorporating a second execution space identifier, for inclusion in said component assembly.

17. A process as in claim 6 in which:

- said private header portion includes a check value calculated based on the contents of said public portion; and
- said process further includes the step of using said check value to determine whether said public portion has been altered or replaced in an unauthorized manner.

18. A process as in claim 6 in which said private header portion includes one or more tags.

19. A process as in claim 18 in which at least one of said tags comprises an access tag.

20. A process as in claim 19 further comprising:

- checking said access tag at some point before said execution step, in order to determine if use of said load module will be allowed.

21. A process as in claim 6 in which said private header portion includes one or more digital signatures.

22. A process as in claim 21 further comprising:

- checking said digital signature at some point before said executing step; and
- taking at least one action depending on the outcome of said checking step.

23. A process as in claim 22 in which said at least one action includes terminating said process prior to said executing step.

24. A process as in claim 22 in which said at least one action includes allowing said executing step to proceed.

25. A process as in claim 22 in which:

- said at least one action includes replacing the load module containing said digital signature with a second load module, and
- said process further includes incorporating said second load module into said component assembly.

26. A process as in claim 22 in which said digital signature checking step includes identifying the creator of said digital signature.

27. A process as in claim 6 in which said private header portion includes at least one check value representing at least one aspect of the state of said load module.

28. A process as in claim 27 further comprising:

- comparing said check value to an expected value; and
- taking at least one action based on the results of said comparison.

29. A process as in claim 28 in which said at least one action includes terminating said process prior to said executing step.

30. A process as in claim 28 in which:

- said load module comprises a first load module;
- at least one action includes accessing a second load module; and
- said securely assembling step comprises assembling said component assembly using said second load module but not said first load module.

31. A process comprising the following steps:

- accessing a first record containing information directly or indirectly identifying one or more elements of a first component assembly,
 - at least one of said elements including at least some executable programming consisting of at least two code segments;
 - a first of said code segments being written in a first programming language; and
 - a second of said code segments being written in a second programming language different from said first programming language,
 - at least one of said elements constituting a load module, said load module including executable programming;
- using said information to identify and locate said one or more elements;
- accessing said located one or more elements;
- securely assembling said one or more elements to form at least a portion of said first component assembly;
 - choosing said first code segment for inclusion in said component assembly;
 - including said first code segment in said component assembly; and
 - excluding said second code segment from said component assembly;
- executing at least some of said first code segment executable programming; and
- checking said record for validity prior to performing said executing step.

32. A process as in claim 31, in which:

- said executing step takes place in a processing environment; and
- said choosing step includes identifying said first code segment as being more suited for execution at said processing environment than said second code segment.

33. A process as in claim 32 in which said step of identifying said first code segment as being more suited is based at least in part on the programming language in which said first code segment is written.

34. A process comprising the following steps:

- at a first processing environment receiving a first record from a second processing environment remote from said first processing environment:
 - said first record containing identification information directly or indirectly identifying one or more elements of a component assembly:
 - at least one of said elements including at least some executable programming;
 - a first of said elements being designed to carry out or participate in metering of user activities;
 - a second of said elements being designed to carry out or participate in budgeting functions said second element specifying a credit method;
 - said component assembly allowing access to or use of specified information;
- accessing said first record;
- using said identification information to identify and locate said one or more elements;
 - said element locating step including locating said first element at said second processing environment and locating said second element at a third processing environment located remotely from said first processing environment and said second processing environment;
- accessing said located one or more elements;
 - said element accessing step including retrieving said first element from said second processing environment and retrieving said second element from said third processing environment;
- securely assembling said one or more elements to form at least a portion of said component assembly specified by said first record; and
- executing at least some of said executable programming,
- said executing step taking place at said first processing environment;
- said executing step including metering use of said specified information, using said first element.

35. A process comprising the following steps:

- at a first processing environment receiving a first record from a second processing environment remote from said first processing environment:
 - said first record being received in a secure container;
 - said first record containing identification information directly or indirectly identifying one or more elements of a first component assembly;

- of a first component assembly;
 - at least one of said elements including at least some executable programming;
 - said component assembly allowing access to or use of specified information;
- said secure container also including a first of said elements;
- accessing said first record;
- using said identification information to identify and locate said one or more elements;
 - said locating step including locating a second of said elements at a third processing environment located remotely from said first processing environment and said second processing environment;
- accessing said located one or more elements;
 - said element accessing step including retrieving said second element from said third processing environment;
- securely assembling said one or more elements to form at least a portion of said first component assembly specified by said first record; and
- executing at least some of said executable programming,
 - said executing step taking place at said first processing environment.

36. A process as in claim 35 in which:

- said first element comprises a metering method; and
- said executing step includes using said first element to meter use of said specified information.

37. A process as in claim 36 in which:

- said second element comprises a credit method; and
- said executing step includes charging against credit supplied by said credit method in return for use of said specified information.

38. A process comprising the following steps:

- creating an initial channel;
- after creation of said initial channel, creating a first channel;
 - said initial channel allocating said first channel to handle a first component assembly;
- accessing a first record containing information directly or indirectly identifying one or more elements of said first component assembly, at least one of said elements including at least some executable programming;
- using said information to identify and locate said one or more elements;
- accessing said located one or more elements;
- within said first channel, securely assembling said one or more elements to form at least a portion of said first component assembly; and
- executing at least some of said executable programming.

39. A process as in claim 38 in which said step of said initial channel allocating said first channel includes:

- making, with said initial channel, one or more calls to a secure database manager; and

- returning, from said secure database manager, a channel blueprint from a secure database.

40. A process as in claim 39 in which said step of creating a first channel is based at least in part on said channel blueprint.

41. A process as in claim 40 in which:

- said channel blueprint includes at least one tag; and
- said step of creating a first channel includes checking said tag to determine the validity or suitability of said channel blueprint.

42. A process as in claim 41 in which said first channel includes a channel header.

43. A process as in claim 42 in which said step of creating a first channel includes incorporating information into said first channel header.

44. A process as in claim 43 in which said incorporated information includes user identification information.

45. A process as in claim 44 in which said incorporated information includes object identification information.

46. A process as in claim 45 in which said incorporated information includes a reference to the type of function to be processed by said first channel.

47. A process as in claim 46 in which said step of creating a first channel includes:

- accessing a control method; and
- binding said control method to said first channel.

48. A process as in claim 47 in which said assembling step includes binding at least one of said elements to said first channel.

49. A process as in claim 48 in which said assembling step includes said control method obtaining memory allocations required for said executing step.

50. A process as in claim 49 in which said step of accessing said one or more located elements includes accessing, with said control method, at least one of said elements from a secure database.

51. A process as in claim 50 in which said step of assembling includes calling, with said control method, an encryption manager to decrypt at least one of said elements.

52. A process as in claim 51 in which said step of assembling includes calling a tag manager with said control method, and comparing, with said tag manager, a tag contained in one of said elements with an expected value or range of values.

53. A process as in claim 52 in which:

- said first channel further includes an event queue;
- said method further comprising writing at least one event into said event queue.

54. A load module comprising:

- a load module header including a public portion and a private portion:
 - said public portion including identification information;
 - said private portion including at least one correlation tag:
 - said correlation tag including information used to determine whether a method has authorization to call or load the load module; and
- a load module body including:

- executable programming which calls or includes:
 - programming which controls at least one aspect of use of at least one file, said programming calling or including programming which provides information relating to the user of said file to an external site;

said programming providing information provides such information in a summary fashion which does not include information deemed confidential by said user; and

- a reference to data;
 - at least some of said data being associated with or used by said executable programming.

55. An operating system comprising:

- component assembling programming which assembles a plurality of elements into a component, said component assembling programming including:
 - validation programming used to validate said elements, said validation programming including:
 - tag checking programming used to check the identity, validity or integrity of elements by comparing tags incorporated in said elements to expected values; and
 - element identification and referencing programming; and
- an object switch which controls and communicates objects, said object switch including:
 - a stream router;
 - one or more stream interfaces;
 - a container manager used to manage secure containers;
 - said container manager contains programming which recognizes secure containers and performs operations on said secure containers;
 - buffering and storage programming; and
 - an object switch interface.

56. An operating system as in claim 55, in which:

- said operations include:
 - constructing secure containers;
 - opening secure containers; and
 - routing secure containers.

57. A component assembly comprising:

- a first load module and a second load module, each load module comprising:
- a load module header, made up of a public portion and a private portion;
 - said public portion including identification information;
 - said private portion including at least one correlation tag;
 - said correlation tag including information used to determine whether a method has authorization to call or load the load module; and

- a load module body, including:
 - executable programming which calls or includes:
 - programming which controls at least one aspect of use of at least one file,
 - said programming controlling at least one aspect of use of at least one file calls or includes programming which provides information relating to the user of said file to an external site;

said programming providing information provides such information in a summary fashion which does not include information deemed confidential by said user; and

- a reference to data;
 - at least some of said data being associated with or used by said executable programming.

58. A component assembly comprising:

- a first load module received from a first source and a second load module received from a second source remote from said first source, each load module comprising:
 - a load module header, made up of a public portion and a private portion;
 - said public portion including identification information;
 - said private portion including at least one correlation tag;
 - said correlation tag including information used to determine whether a method has authorization to call or load the load module; and
- a load module body, including:
 - executable programming; and
 - a reference to data;
 - at least some of said data being associated with or used by said executable programming.

This is a divisional of Ser. No. 08/388,107, filed Feb. 13, 1995, abandoned.

Background/Summary:

Drawing
Descriptions:
Description of
Preferred
Embodiments:

Foreign References:

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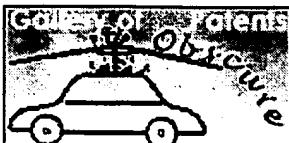
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